INTERIM REMEDIAL ACTION REPORT

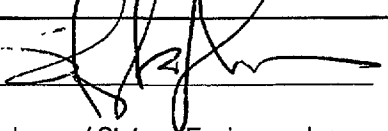
San Gabriel Valley Area 2 Superfund Site
(commonly known as the Baldwin Park Operable Unit)

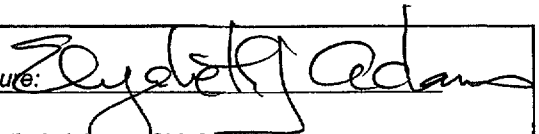
Valley County Water District Subproject

Operable Unit 04

March 2005

To the best of our knowledge, after thorough investigation, we certify that the information contained in or accompanying this submission is true, accurate and complete. We are aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

IRA Report Prepared By:	**Respondents**	*Signature:*  Stephen B. Johnson / Stetson Engineers, Inc. *Date:* 3/31/05

Approved By:	**EPA Region 9 Approving Official:**	*Signature:*  Elizabeth J. Adams, Chief Site Cleanup Branch, Superfund Division *Date:* 3/31/05

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EPA CERCLIS ID Number CAD 980818512

Valley County Water District Subproject

Operable Unit 04

Section I - Introduction

The San Gabriel Valley Superfund Sites

The San Gabriel Valley Superfund sites include multiple areas of contaminated groundwater in the San Gabriel Basin aquifer, a primary source of drinking water for Southern California. The sites include areas of soil and groundwater contamination underlying portions of the cities of Alhambra, Arcadia, Azusa, Baldwin Park, Industry, Irwindale, El Monte, La Puente, Monrovia, Rosemead, South El Monte, and West Covina, in eastern Los Angeles County. The area is largely suburban, with a mix of residential, commercial, and industrial development.

Groundwater contamination was first detected in the San Gabriel Valley in 1979. By 1984, 59 wells were found to be contaminated with volatile organic compounds (VOCs). As of August 2004, 196 out of 275 potable wells have detectable levels of VOCs, perchlorate, N-nitrosodimethylamine (NDMA), and/or 1,4-dioxane. Despite the widespread areas of contamination, the San Gabriel Basin aquifer continues to provide approximately 90 percent of the domestic water supply for the Valley's more than one million residents.

The San Gabriel Valley Area 2 Superfund site is one of four San Gabriel Valley groundwater sites listed on the National Priorities List. The other three San Gabriel Valley sites are San Gabriel Valley Area 1 (which includes the Whittier Narrows, El Monte, and South El Monte Operable Units), San Gabriel Valley Area 3 (which addresses contamination in the Alhambra area), and San Gabriel Valley Area 4 (which includes the Puente Valley Operable Unit).

The San Gabriel Valley Area 2 Superfund site includes four operable units, which are collectively known as the Baldwin Park Operable Unit or BPOU. This remedial action report addresses one of the four operable units: the Valley County Water District's Arrow/Lante facility (designated by EPA as Operable Unit 04 of the San Gabriel Valley Area 2 Site).

The San Gabriel Valley Area 2 Superfund Site

Extent of Contamination

The San Gabriel Valley Area 2 Superfund Site addresses multiple, commingled plumes of groundwater contamination which have resulted in an area of contamination over a mile wide and eight miles long. The area of contamination extends to the southwest from the City of Azusa through portions of the cities of Irwindale, Baldwin Park, West Covina, and Industry. The depth to the groundwater varies from about 150 to 350 feet in this area, and the groundwater contamination extends in various areas from the water table to more than 1,000 feet below ground surface. The most prevalent contaminants in the groundwater are trichloroethylene (TCE), perchloroethylene (PCE), carbon tetrachloride (CTC), perchlorate, and NDMA. TCE, PCE, and CTC are solvents that were commonly used for degreasing and cleaning; perchlorate is used in solid-fuel rockets; and NDMA is associated with liquid-fuel rockets. Other VOCs are also present, including the chemical 1,4-dioxane, which has been used, among other things, as a stabilizer in chlorinated solvents. The peak contaminant concentration measured in groundwater at the site is 38,000 micrograms per liter (ug/l) of PCE.

Remedial Investigation/ Feasibility Study (RI/FS), Record of Decision, and Explanation of Significant Differences (ESD)

From 1990 to 1993, EPA completed a remedial investigation and feasibility study for the site. The investigation included the compilation and analysis of sampling results from existing water supply wells, temporary reactivation and sampling of inactive water supply wells, installation of a 1,500-foot deep monitoring well (by EPA), installation and sampling of more than two dozen shallow groundwater monitoring wells (by Potentially Responsible Parties [PRPs]), development of a groundwater flow model of the aquifer, and preliminary discussions with local water agencies over the role of local water agencies in the cleanup. In 1993, EPA issued its proposed cleanup plan.

EPA adopted a Record of Decision (ROD) for an interim remedy for the site in 1994 and updated the ROD in May 1999 with an Explanation of Significant Differences (ESD). The remedial objectives expressed in the ROD and ESD are to prevent future increases in, and begin to reduce, concentrations of groundwater contaminants in the BPOU by limiting further migration of contaminated groundwater into clean and less contaminated areas or depths that

would benefit most from additional protection and by removing contamination from the aquifer. The ROD specifies extraction of contaminated groundwater at the downgradient end of two broad subareas of contamination, at locations and rates sufficient to limit the movement of contaminated groundwater through each subarea during all anticipated groundwater flow conditions. A secondary objective is to provide data necessary to determine final cleanup standards for the aquifer.

Identification of Potentially Responsible Parties (PRPs)

The majority of the PRPs at the site were identified between 1990 and 1997. The PRPs were identified after a multi-year cooperative effort between EPA and the California Regional Water Quality Control Board, Los Angeles Region (RWQCB), which included inspections of more than 1,400 commercial and industrial businesses in the area and testing of soil or groundwater where contamination was observed or suspected. PRPs were identified using test results, historical federal, state and local records, responses to information requests, and other information.

EPA Enforcement Efforts and EPA-PRP-Water Agency Negotiations

A PRP group performed initial planning and pre-design work from approximately 1995 to early 1997. During this period, negotiations continued with several regional and local water agencies over implementation of the cleanup plan. In 1998, the negotiations began to focus on a plan proposed by the Main San Gabriel Basin Watermaster (Watermaster, a court-appointed entity responsible for administering the water rights agreement in the San Gabriel Basin). The Watermaster Plan proposed that the treated groundwater be used locally, and that local agencies play a major role in designing, building, and operating the cleanup facilities. During development of the Plan, detections of perchlorate and NDMA forced the closure of additional public water supply wells in the area. This led to renewed local interest in using the treated groundwater produced by the cleanup to meet potable water demands.

In mid-1999, as PRP-water agency negotiations continued, EPA resumed Consent Decree negotiations with the PRPs. In September 1999, EPA received a "Good Faith Offer" from several of the PRPs to design, build, and operate the cleanup facilities. EPA-PRP negotiations continued into early 2000 in an effort to translate the September 1999 offer into a binding commitment. Negotiations failed and, on June 30, 2000, EPA issued a Unilateral Administrative Order ("Order") directing the 19 PRPs to complete the remedial design and make arrangements for the construction and operation of the groundwater extraction wells, treatment systems, and related cleanup facilities.

A group of PRPs complied with the Order, but design work required by the Order was slowed by uncertainty over local involvement in the cleanup. In Fall 2000,

negotiations between the PRPs and water agencies resumed, and in January 2001 a 25-page preliminary agreement was reached between six water agencies and eight of the PRPs. The agreement, known as the Memorandum of Understanding (MOU), calls for the PRPs to fund most of the cost of designing, building, and operating the groundwater extraction and treatment facilities called for in EPA's cleanup plan and for the water agencies to construct, own, and operate the facilities.

In March 2002, the PRPs and water agencies successfully translated the MOU into a binding agreement. Eight PRPs and seven water agencies signed the 300-page "BPOU Project Agreement," which was approved by the Los Angeles County Superior Court in May 2002. The agreement commits the PRPs to fund the design, construction, and operation of the groundwater extraction, treatment, and conveyance facilities needed to satisfy EPA's cleanup goals. The water agencies and their contractors are completing most of the design and construction work, with EPA and PRP oversight.

The Site Remedy

The remedy for the site is being constructed as four separate groundwater pump and treat systems, each ranging in capacity from 2,500 gallons per minute (gpm) to 7,800 gpm. Each system is designated as a separate operable unit of the San Gabriel Valley Area 2 site and is designed to function as an independent treatment facility. The extraction rates and locations were developed during the remedial design process using a numeric model of groundwater flow and particle movement in the aquifer. EPA determined that, as a long-term average, a total of 22,000 gpm of contaminated groundwater must be extracted at eight locations. Total treatment capacity will exceed 25,000 gpm, or 36 million gallons per day (MGD), of contaminated groundwater. The work has been "phased" to allow construction to begin on the initial subprojects as design work is completed on the later subprojects. Each subproject has or will have one or more groundwater extraction wells and a series of treatment processes including air stripping or liquid phase granular activated carbon, ion exchange, and ultraviolet light (with hydrogen peroxide). The subject of this Remedial Action Report is the Valley County Water District subproject. The other three subprojects are the La Puente Valley County Water District Subproject, the San Gabriel Valley Water Company B6 Subproject, and the San Gabriel Valley Water Company B5 Subproject. As of March 2005, the La Puente subproject is operating, the B6 subproject has been constructed and is in startup, and the B5 subproject is in construction.

Section II – Operable Unit 04 Background

The subject of this Interim Remedial Action (IRA) Report is the Valley County Water District Subproject, operable unit 04 of the San Gabriel Valley Area 2 Site. The subproject treatment plant, located at 5120 Lante Street in Baldwin Park, CA, is owned and operated by Valley County Water District (VCWD) a public

agency, which serves approximately 50,000 people in the cities of Azusa, Baldwin Park, Irwindale, and West Covina. VCWD was formed in 1925 and incorporated in January 1926, under the name Baldwin Park County Water District. On January 1, 1978, its name was officially changed to VCWD.

The EPA's targeted average groundwater extraction rate for the subproject is 6,000 gpm. The planned capacity of the treatment facility at VCWD is 7,800 gpm. Extraction rates can vary daily or weekly but are expected to average the targeted rate over time. It is anticipated that down time for maintenance and repair of the subproject facilities will be approximately 10 percent. If down time is 10 percent, the average flow rate at VCWD Plant will be 7,000 gpm, which exceeds the EPA targeted flow rate. The EPA's targeted rates for the four subprojects are listed in Table 1.

Table 1. BPOU Target Extraction Rate and Planned Capacity

Subproject	Targeted Average Groundwater Extraction Rate	Planned Capacity
La Puente Valley County Water District subproject	2,250 gpm	2,500 gpm
San Gabriel Valley Water Company B6 subproject	6,750 gpm	7,800 gpm
Valley County Water District subproject	6,000 gpm	7,800 gpm
San Gabriel Valley Water Company B5 subproject.	7,000 gpm	7,800 gpm
TOTAL	22,000 gpm	25,900 gpm

VCWD owns two water supply wells, known as the Arrow and Lante Wells, at the treatment plant site. VOCs were first detected in the Lante well in 1979. The historical peak TCE concentration at VCWD Lante Well was 1,315 micrograms per liter (ug/l) and the historical peak PCE concentration was 1,200 ug/l. The historical peak 1,2-DCA concentration at VCWD Lante Well was 12.5 ug/l and the historical peak CTC Concentration was 17.6 ug/l. Other VOCs detected at VCWD Lante Well include 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethylene (1,1-DCE), cis-1,2,-dichloroethene (cis-1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), chloroform (CF), methylene chloride (MC), 1,2-dichlorobenzene (1,2-DCB), 1,4-dichlorobenzene (1,4-DCB), trichlorotrifluoroethane, and vinyl chloride

(VC). During October 2004 a water quality sample was collected as part of treatment facility startup testing. At that time TCE was 27 ug/l, PCE was 8.6 ug/l, 1,2-DCA was 0.8 ug/l and CTC was non-detect.

In addition to VOCs, NDMA, perchlorate, and 1,4-dioxane have been detected at VCWD Lante Well. The highest NDMA concentration detected at the VCWD Lante Well was 3.0 ug/l in May 1998. The current State of California notification level (previously known as an "action level") for NDMA is 0.010 ug/l. The most recent sampling at VCWD Lante Well was in October 2004 and the NDMA concentration was 0.0046 ug/l. The historical peak perchlorate concentration detected at VCWD Lante Well was 94 ug/l in April 1998. The most recent concentration of perchlorate was 4.4 ug/l in October 2004. The current notification level for perchlorate is 6 ug/l. The historical peak concentration of 1,4-dioxane at VCWD Lante Well was 36.8 ug/l in November 1998. The most recent concentration of 1,4-dioxane was 18 ug/l in October 2004. The notification level for 1,4-dioxane is 3 ug/l.

In 1984, VCWD installed an air stripper to remove VOCs from water pumped from the Lante well. In 1992, VCWD installed liquid phase granular activated carbon vessels to remove VOCs from water pumped from the Arrow well. These treatment facilities were no longer used following the discovery of perchlorate in the ground water during 1997.

In 2002, as a signatory to the BPOU Project Agreement, VCWD agreed to help implement the site remedy by constructing two new extraction wells SA1-1 and SA1-2, modifying the existing VCWD Lante Well to increase the pumping capacity from 1,000 gpm to 3,400 gpm, and constructing a new 7,800 gpm treatment facility at the VCWD Arrow Lante Wellsite. The locations of the VCWD Lante Well, Well SA1-1, Well SA1-2 and the VCWD Arrow Lante Treatment Facility (Treatment Facility) are shown on Plate 1. Table 2 lists the capacity, depth, and screen interval of each well.

Well SA1-1 is located at the southwest corner of 4th Street and Arrow Highway in the City of Irwindale. Well SA1-2 is located at 4937 Azusa Canyon Road in the City of Baldwin Park. Well SA1-1 was drilled to 670 feet (ft) below ground surface (bgs) and was perforated from 250 to 650 ft bgs; Well SA1-2 was drilled to 675 ft bgs and was perforated from 255 to 655 ft bgs. The SA1-1 and Lante Wells are equipped with variable frequency drives (VFD) which allow variable pumping rates up to 3,400 gpm. The SA1-2 well has a capacity of 2,400 gpm. In addition, four piezometers, two shallow (designated "S") and two deep (designated "D"), were constructed at each wellsite in accordance with the approved BPOU Performance Standards Evaluation Plan. The piezometers at SA1-1 wellsite are designated PZ1-1AS, PZ1-1AD, PZ1-1BS and PZ1-1BD; the piezometers at SA1-2 wellsite are designated PZ1-2AS, PZ1-2AD, PZ1-2BS and PZ1-2BD; and the piezometers at Arrow Lante Wellsite are designated PZ1-3AS, PZ1-3AD, PZ1-3BS and PZ1-3BD. Piezometers designated "A" are

approximately 50 feet from the corresponding extraction well; piezometers designated "B" range from approximately 230-435 feet away.

Four new air-stripping towers manufactured by Layne Christensen Company (Layne) were installed at the Treatment Facility to remove VOCs. The four air-stripping towers are operated in parallel configuration. Each air stripper is made of aluminum, is 11.5 feet in diameter and 38 feet high. The packing depth is 26 feet. Each air stripper is designed to treat a flow of approximately 1,950 gpm. Each air-stripping tower has an off-gas adsorption unit. The tower packing media is made up of Jeager No. 2 Tripacks. As the groundwater flows over the packing in the air-stripping towers, the VOCs are transferred from the water to the air flowing in a countercurrent direction. Each air blower is equipped with a 125 horsepower (hp) motor and provides a design air flow of about 14,000 cubic feet per minute (cfm). The design air to water ratio is 50:1. The treated groundwater from each of the four air strippers flows by gravity into a common 72,000-gallon wet well and is then pumped from the wet well into the ISEP modules using five 150 hp vertical turbine pumps.

The VOCs in the air are removed by resin in the off-gas adsorption units manufactured by MC^2 Environmental. Treated air is then released to the atmosphere. The resin is sequenced into a desorption unit where 99% of the entrained VOCs are destroyed by a catalytic oxidizer. The oxidizers will emit mainly carbon dioxide, hydrogen chloride (which is then removed by a scrubber), water, and minor amounts of VOCs. The regenerated resin is then transported by air pressure back to the adsorption units to repeat the process.

Two ion exchange systems, known as the ISEP units, manufactured by Calgon Carbon Corporation (Calgon), were installed at the Treatment Facility to remove perchlorate. Each ISEP unit contains 30 resin-filled vessels (ion exchange columns) arranged in a carousel on a rotating frame, brine and rinse water systems, and a process control system. The ion exchange columns are rotated through a sequence of operations including adsorption, displacement, entrainment, rejection, regeneration, and rinse. These operations occur simultaneously as the carousel rotates. Perchlorate and other anions such as nitrate, sulfate, carbonate and bicarbonate are transferred from the water to the resin during the adsorption process. These anions are later removed from the resin during regeneration. A seven percent sodium chloride solution is delivered to the ion exchange columns during the regeneration phase. Chloride ions displace perchlorate and other anions adsorbed on the resin, producing a waste brine stream containing high concentrations of perchlorate, nitrate, sulfate, carbonate, bicarbonate and other anions. After the ISEP process, the water is pumped to an UV/oxidation system for further treatment.

An UV/oxidation treatment facility manufactured by Trojan Technologies Inc. (Trojan) was installed at the Treatment Facility to remove NDMA and 1,4-dioxane from the contaminated groundwater. The technology, known as the UVTerra

system, consists of four reactors in parallel and a System Control Center (SCC). Each reactor contains a total of 9 Rotational Units (RUs) and each RU contains four sections with 16 UV lamps in operation per section. Under normal conditions, only 7 of the 9 RUs in each reactor will be in operation. This provides back-up RUs. Therefore, each reactor has a total of 448 (7 x 4 x 16) low-pressure UV lamps in operation. Each RU can be removed by overhead crane and cleaned in an acid tank. NDMA is destroyed by direct photolysis when exposed to UV light. Destruction of 1,4-dioxane requires addition of hydrogen peroxide, which forms hydroxyl radicals in water. Under the influence of UV light, the hydroxyl radicals oxidize 1,4-dioxane.

As the air stripper removes VOCs, carbon dioxide is also removed from the water. As a result, after the air stripping process the pH of the water increases, which also increases the calcium carbonate precipitation potential. In an effort to control calcium carbonate precipitation, which can negatively affect the performance of ISEP in removing perchlorate, an acid injection system was installed. Two connecting tanks, each with a capacity of 4,400 gallons are used to store hydrochloric acid. Hydrochloric acid may be added to the treatment stream either before or after the air strippers. In addition, treated water pH decreases after the ISEP process because the ISEP removes carbonate and bicarbonate. Treated water with lower pH may be more corrosive. To control this problem, sodium hydroxide may be injected to the treated water after the UV process to raise the pH in the treated water to non-corrosive levels. The dosage of the sodium hydroxide injection will be based on the results of the startup testing at the Treatment Facility.

VOCs, perchlorate, NDMA and 1,4-dioxane treatment equipment were designed by equipment vendors based on maximum expected influent concentrations and non-detect effluent concentrations. The overall plant layout and design of piping, electrical, and instrumentation was designed and coordinated by Stetson Engineers Inc. (Stetson) and SPEC Services in accordance with the Uniform Building Code. Design review was performed by VCWD, the Cooperating Respondents (CRs), and EPA.

As of March 2005, construction is complete and startup testing is underway. VCWD has begun a series of startup tests to obtain an amended permit from DHS for the operation of the Arrow Lante Treatment Facility. Table 3 lists the treatment system vendors and the criteria used to design the treatment facilities.

After treatment, water is conveyed to either VCWD's or Suburban Water System's (SWS) customers. Sodium hypochlorite is added to the treated water for disinfection before the water leaves the plant.

Brine produced as a byproduct of the ion exchange process is currently discharged to a dedicated brine line under permit from the Los Angeles County Sanitation Districts (CSD). The brine line discharges to the CSD's Joint Water

Pollution Control Plant in Carson, CA, which in turn discharges to the Pacific Ocean. A study is currently underway to determine whether perchlorate in the brine may be degraded in the sewer system as it flows to the Carson treatment plant. In accordance with the 2002 BPOU Project Agreement, the discharge of brine that has not received pre-treatment for perchlorate shall cease by 2006. Pilot-scale studies of several brine treatment technologies were recently completed, to provide information needed to support a decision on how best to meet the 2006 deadline. Plate 2 shows a plan view of the treatment plant site. Plate 3 is a diagram of the treatment process at VCWD Arrow Lante Treatment Facility.

Table 2. Construction Details – VCWD Lante Treatment Facility Groundwater Extraction Wells

	Capacity	Depth	Screened Interval
SA1-1	3,400 gpm	670 feet deep	Screened intervals from 250 to 650 feet
SA1-2	2,400 gpm	675 feet deep	Screened intervals from 255 to 655 feet
Lante	3,400 gpm	600 feet deep	Screened intervals from 275 to 585 feet

Table 3. VCWD Lante Treatment Facility Treatment Equipment - Design Criteria and Vendors.

Contaminants Treated	Technology	Vendor	Design Criteria		
			Influent Concentration	Effluent Concentration	Other

Table 3. VCWD Lante Treatment Facility Treatment Equipment - Design Criteria and Vendors.

Contaminants Treated	Technology	Vendor	Design Criteria		
			Influent Concentration	Effluent Concentration	Other
VOCs	Air Stripping	Layne Christensen Company	20 ug/l 1,1,1-TCA 10 ug/l 1,1-DCA 50 ug/l 1,1-DCE 10 ug/l 1,2-DCA 5 ug/l benzene 10 ug/l CTC 10 ug/l chloroform 50 ug/l cis-1,2-DCE 5 ug/l ethylbenzene 1,000 ug/l PCE 5 ug/l toluene 5 ug/l trans-1,2-DCE 1,000 ug/l TCE 5 ug/l xylene 5 ug/l Methylene Chloride 5 ug/l Acetone 15 ug/l Carbon Disulfide	< 0.5 ug/l for all VOCs	Air:water > 50:1 or as specified in DHS permit
	RES-X VOC Adsorption System (to treat offgas from the air strippers)	Mc^2	NA	< 214 ppbv for total VOCs	15,200 lb resin
Perchlorate	Ion Exchange ("ISEP" system)	Calgon Carbon Corporation	350 ug/l perchlorate	< 4.0 ug/l perchlorate	NA
NDMA and 1,4-dioxane	Ultraviolet light with peroxide	Trojan Technologies	3.0 ug/l NDMA 25 ug/l 1,4-dioxane	< 0.002 ug/l NDMA, < 2 ug/l 1,4-dioxane	NA

SECTION III -- CONSTRUCTION ACTIVITIES

Permitting

A negative declaration was filed to address California Environmental Quality Act (CEQA) issues. VCWD has obtained required building and grading permits from the City of Baldwin Park. Prior to construction, encroachment permits were obtained from the City of Baldwin Park, City of Irwindale, the City of West Covina

and the County of Los Angeles for the construction of the treatment plant, raw water pipelines, treated water pipelines and waste brine pipelines. A permit was obtained for connection of the facility's brine line to the CSD industrial sewer line. In addition to the construction permits, a DHS water supply permit and a South Coast Air Quality Management District (SCAQMD) permit are required for the operation of the treatment facility.

A National Pollutant Discharge Elimination System (NPDES) permit was initially obtained for discharge of treated water during the startup and performance testing period, but subsequently rescinded. The discharges at VCWD Arrow Lante Treatment Facility have occurred under EPA authority. In a letter dated September 16, 2004, EPA stated that discharges with elevated chloride levels can occur in limited circumstances even if they do not meet Applicable or Relevant and Appropriate Requirements (ARARs). EPA informed the CRs that no permit is required, in accordance with Section 121(e) of the Comprehensive Environmental Response Compensation and Liability Act and Section 300.400(e) of the National Contingency Plan.

In addition, during development of the new SA1 extraction wells, untreated groundwater was discharged to Big Dalton Wash. Due to the high rates and volumes of discharge, EPA concluded that the only practicable option was to discharge the water without treatment after implementing measures to ensure that the water infiltrated back into contaminated portions of the aquifer. These discharges also occurred under EPA authority and without an NPDES permit, in accordance with conditions specified in a May 13, 2003 letter from EPA to the RWQCB (Los Angeles Region).

Site Preparation
Site preparation activities include over-excavation, re-compaction, and grading of soils under the treatment facilities. Excavation was performed where required for the buildings, wet wells, valve vaults, meter vaults, and pipe trenches.

Process Installation
The process equipment is installed on reinforced concrete slabs. The ion exchange and UV/oxidation equipment are housed in one concrete block building constructed as part of the project. Connecting piping and wiring has also been constructed as part of the project.

Offsite Extraction Wells Construction
One new well and four new piezometers have been constructed at the SA1-1 site; and one new well and four new piezometers have also been constructed at the SA1-2 site. Four new piezometers have been constructed at the SA1-3 site.

Raw Water and Treated Water Pipeline Construction
As part of this remedy, raw water pipelines have been constructed to deliver water from the new extraction wells at SA1-1 and SA1-2 sites to the Treatment

Facility. In addition, treated water pipelines have also been constructed to deliver treated water from the Treatment Facility to SWS Plant 121 Reservoir.

SECTION IV -- CHRONOLOGY OF EVENTS

1979	VOCs were detected above the MCLs at VCWD Lante Well
1984	VCWD constructed and operated an air stripper to remove VOCs from the Lante Well
May 1984	San Gabriel Valley Area 2 site added to the National Priorities List
March 1994	EPA adopts Record of Decision for the Baldwin Park Operable Unit
1998	VCWD Lante Well was taken out of service because perchlorate, NDMA and 1,4-dioxane were detected above the ALs
May 1999	EPA issued ESD for the BPOU to include perchlorate, NDMA and 1,4-dioxane as contaminants of concern
June 2000	EPA issues Unilateral Administrative Order for RD/RA
Aug 2001 to Feb 2003	Remedial design documents submitted to EPA
Aug 2001	VCWD began to sign contracts with the VOC, perchlorate, NDMA and 1,4-dioxane treatment facility vendors
Mar 2002	BPOU Project Agreement signed
Oct 2002	RC Foster Corporation was awarded the construction contract and was given a notice to proceed
Jul 2003	Construction of the offsite extraction wells were completed
Feb 2005	Begin DHS compliance testing
Feb 2005	Construction completion of the Treatment Facility
Jun 2005	Anticipated date to receive permit from DHS to operate the Treatment Facility

SECTION V -- PERFORMANCE STANDARDS AND CONSTRUCTION QUALITY CONTROL

The target average extraction rate for the VCWD Arrow Lante Treatment Facility is 6,000 gpm. VCWD will operate Lante Well and the two new extraction wells continuously to meet this requirement. The maximum design flow through the treatment facilities is 7,800 gpm.

Raw water and treated water samples for VOCs, perchlorate, nitrate, NDMA and 1,4-dioxane will be sampled and analyzed according to the DHS permit requirements. Water quality analysis results will be submitted to EPA and DHS on a monthly basis or as otherwise required by DHS.

The SCAQMD permit to construct for the air stripper requires analysis of VOCs at the outlet of the resin desorption units on a weekly basis and performance of a detailed system source test within 180 days of initial operation. This detailed source test will include speciation of total VOCs, total chlorides, as well as

dioxins and furans that may form in the desorption oxidation process. The SCAQMD permit requires that the system operate within the levels of acceptable human health risk as defined by SCAQMD Regulation XIV. This is confirmed by comparing air samples from system operation as well as influent water sample results with a risk model for the facility built using SCAQMD guidelines.

CSD requires quarterly sampling and analysis of the waste brine generated by the ISEP at the Treatment Facility. Samples for VOCs, semi-VOCs, perchlorate, 1,4-dioxane, pH, sulfide, oil and grease, chloride, alkalinity, calcium, magnesium, volatile total toxic organics, suspended solids and chemical oxygen demand will be collected on a quarterly basis. The results will be submitted to CSD on a quarterly basis.

All water and air quality samples will be analyzed using EPA or DHS approved methods at a DHS certified laboratory. Appropriate quality assurance and quality control will be applied to all the samples analyzed.

The construction work was inspected daily by Stetson for compliance with the plans and specifications. Material testing was performed for all concrete placed at the site. Inspections were conducted by DHS during the startup and performance testing period in the winter of 2005.

During startup testing, samples of the raw water and treated water have been collected and analyzed regularly to assure proper operation of the plant. The equipment contracts required that the installed equipment meet the design performance criteria. Testing at startup and throughout the warranty period for the equipment ensures that the constructed facilities meet the design criteria.

Several plans and documents were prepared for the construction of the VCWD Arrow Lante Treatment Facility. The names, authors and the dates of the latest or approved plans or documents are listed below.

"*Specifications and Contract Documents for Construction of Two Production Wells and Four Piezometers*", Stetson Engineers Inc., September 26, 2002.

"*Valley County Water District Subarea 1 Raw Water Pipeline (Record Drawings)*", Stetson Engineers Inc., February 27, 2004.

"*Valley County Water District Subarea 1 Treated Water Pipeline (Design Drawings)*", Stetson Engineers Inc., December 2002.

"*Valley County Water District Subarea 1 Brine Pipeline (Design Drawings)*", Stetson Engineers Inc., December 2002.

"*Valley County Water District, Request for Proposals, Specifications and Contract Documents for the Subarea 1 Treated Water Pipeline Project*", Stetson Engineers Inc., December 2002.

"*Valley County Water District Arrow Lante Treatment Facility Project, Phase I (Design Drawings)*", Stetson Engineers Inc., October 2002.

"*Valley County Water District Arrow Lante Treatment Facility Project, Phase II (Design Drawings)*", Stetson Engineers Inc., June 2003.

"*Valley County Water District Specifications and Contract Documents for the Arrow Lante Treatment Facility, Phase I*", Stetson Engineers Inc., September 2002.

"*Valley County Water District Specifications and Contract Documents for the Arrow Lante Treatment Facility, Phase II*", Stetson Engineers Inc., May 2003.

"*Construction Quality Assurance Plan, Valley County Water District Arrow Lante Treatment Facility*", Stetson Engineers Inc., August 2003.

"*Sampling and Analysis Plan, Installation of Two Groundwater Production Wells and Six Piezometer Clusters for the Arrow-Lante Well Site*", Stetson Engineers Inc., May 2003.

SECTION VI -- FINAL INSPECTION AND CERTIFICATIONS

The amended permit from DHS to operate the Treatment Facility will be granted after the startup tests demonstrate the effectiveness of the new treatment facilities in removing all the contaminants to non-detectable levels. In addition, a public hearing will be held to accept public comments on using the treated water from the Treatment Facility as a source of drinking water supply.

The EPA final inspection occurred on February 17, 2005.

SECTION VII -- OPERATION AND MAINTENANCE ACTIVITIES

The startup tests at the Treatment Facility were completed in March 2005. The scheduled routine maintenance activities for the Treatment Facility are shown on Table 4.

Table 4. Summary of Routine Maintenance

	Daily	Weekly	Monthly	Quarterly	Six Months	Annual	After 8760 Hours
ISEP Unit	Inspect brine pumps, bag filters, conductivity probes, response to warnings or alarms	Wash down turntables and vessels	Inspect gear reducer	Inspect pumps on brine skid, Lubricated rotating head bearing and idler gears	Clean shafts and vent plugs, Lubricate turntable bearings; Change oil in turntable drive, Inspect		
UVTerra	Check for lamp failure, respond to warnings or alarms		Complete items on maintenance check list	Visually inspect lamp sleeves for fouling			Remove and replace lamps
Brine Compliance Vault			Calibrate pH probe and replace pH chart rolls			Calibrate equipment	
Air Stripper			Check and maintain blowers, filters, bearings, ductwork connections			Inspect and clean towers	
Booster and Well Pumps			Inspect and Maintain				Lubricate bearings
Resin Adsorption System	Check media flow, blower, and chemical feed system for normal operation	Check and maintain system filters, drums, and buckets Check temperature on heater elements	Check and maintain filters, sensors, oil level, and vacuum blower belts. Check electrical system on starters and contactors	Check calibration of all thermocouples, clean and calibrate pressure ports and probes	Service main and vacuum blower assemblies per manufacturer's recommendations	Service, check, and clean all system equipment per manufacturer's recommendations	

SECTION VIII -- SUMMARY OF PROJECT COSTS

Capital Costs

In its 1999 ESD, EPA estimated capital cost at $ 28.4 million for a 6,500 gpm treatment facility. Project capital costs were estimated in the 2002 BPOU Project Agreement to be approximately $31.4 million. A breakdown of this estimate is

included in Appendix A. These costs were based on a flow of 7,800 gpm. As of November 10, 2004, the updated estimated capital cost at completion is $41.2 million. Approximately $3.9 million of the increase in estimated capital cost was due to unanticipated conditions and subsequent increases in costs for the 3.7 mile long treated water pipeline. Actual capital costs for the Treatment Facility as of October 2004 totaled $38.2 million. Summaries of these costs are included in Appendix A and include engineering, project support, construction, process equipment, start up testing, and laboratory analysis.

Federal funding for the project was received through the U.S. Bureau of Reclamation in the amount of $7.6 million, as of August 20, 2004.

Operations and Maintenance Costs

In its 1999 ESD, EPA estimated the Operations and Maintenance (O&M) costs for operating a 6,500 gpm treatment facility to be $3.4 million per year. The O&M cost estimated in the 2002 BPOU Project Agreement was approximately $2.3 million per year. Based on this estimate and an average flow of 6,000 gpm, the cost to treat the water would be approximately $237 per acre-foot. The O&M costs were revised in October 2004 to be $2.8 million per year. Based on this estimate, the cost to treat the water would be approximately $290 per acre-foot. A breakdown of this estimate is included in Appendix A. Operations will begin in the summer of 2005.

SECTION IX -- OBSERVATIONS AND LESSONS LEARNED

The lessons learned from the construction and startup testing at SGVWC Plant B6 have been applied to the Treatment Facility. More information will be provided upon completion of startup testing at the Treatment Facility.

SECTION X -- CONTACT INFORMATION

The Cooperating Respondents (CRs) and Water Entities (WEs) used the following contractor to construct the remedial action facilities:

Bob Foster
RC Foster Construction, Inc.
264 Corporate Terrace Circle
Corona, CA 92879
(909) 738-8211

Matthew McCullough
MC2 Environmental Engineering Services

355 North Sheridan Street, Suite 103
Corona, CA 92880
(951) 739-9593

The EPA used the following contractor for oversight of the remedial action:

CH_2M Hill
David Towell
5370 Kietzke Lane, Suite 200
Reno, NV 89511
(775) 329-7238

Contract Number: 68-W-98-225
Work Assignment Number:005-RXBF-09M5 and 015-RXBF-09M5

The following companies analyzed samples:

Weck Laboratories, Inc.
14859 East Clark Avenue
City of Industry, CA 91745-1396
(626) 336-2139

Montgomery Watson Laboratories
750 Royal Oaks Drive #100
Monrovia, CA 91016
(626) 568-6400

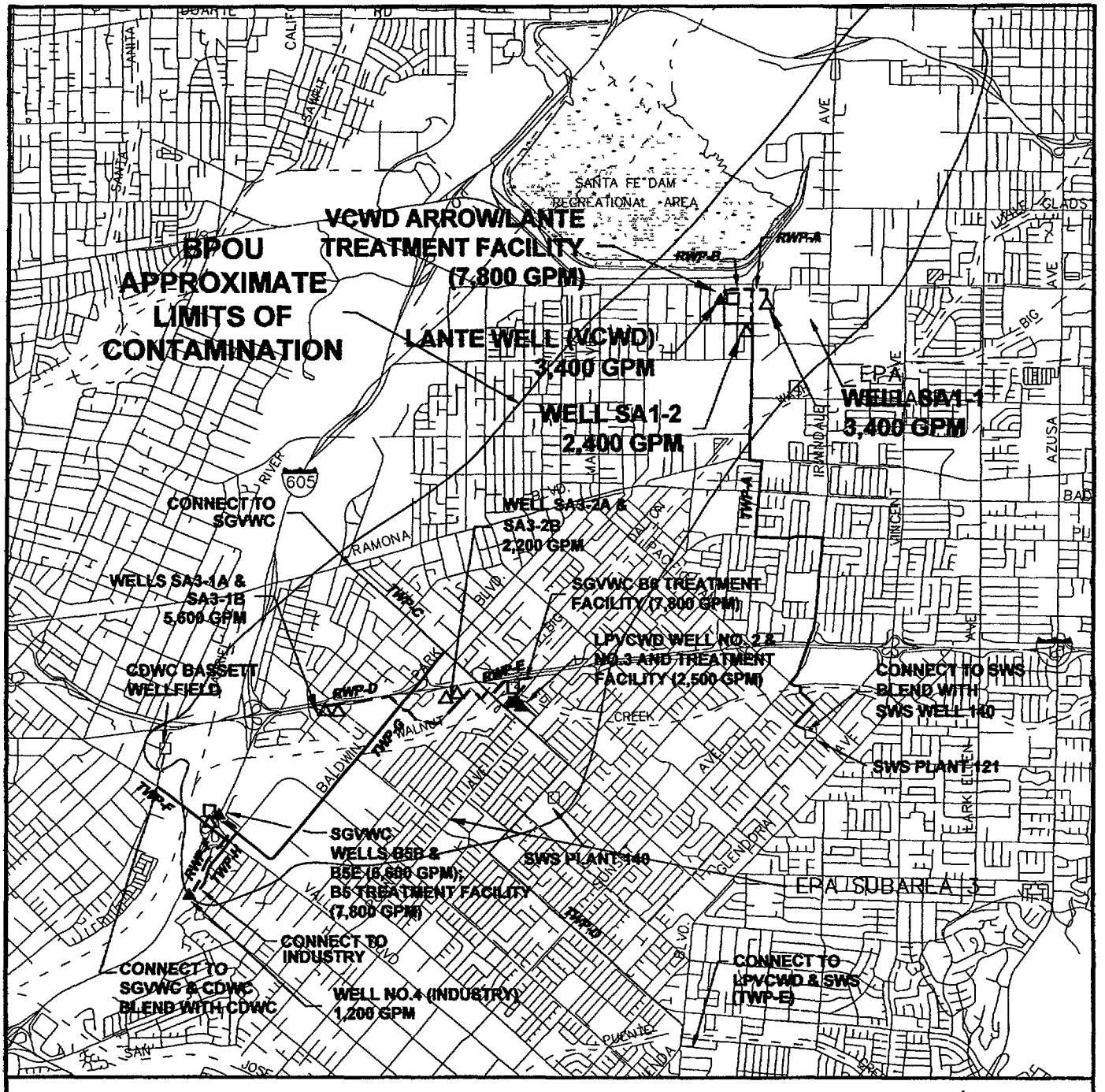
The Project Manager for the CRs and WEs is:

Steve Johnson
Stetson Engineers, Inc.
861 Village Oaks Drive, Suite 100
Covina, CA 91724
(626) 967-6202

The Project Manager for the EPA is:

Wayne Praskins
U.S. EPA Region 9
75 Hawthorne Street (SFD-7-3)
San Francisco, CA 94105
(415) 972-3181

PLATE 1



LEGEND

- EXISITING TREATED WATER PIPELINE
- PROPOSED TREATED WATER PIPELINE
- PROPOSED RAW WATER PIPELINE
- EXISTING TREATMENT FACILITY
- PROPOSED TREATMENT FACILITY
- EXISTING EXTRACTION WELLS
- PROPOSED EXTRACTION WELLS
- SYSTEM INTERCONNECTION PIPELINE

N

0 2500' 5000'

STETSON ENGINEERS INC.

861 VILLAGE OAKS DRIVE, SUITE 100
COVINA, CALIFORNIA 91724
TEL (626) 967-6202
FAX (626) 331-7065

2171 E Francisco Blvd., Suite K
San Rafael California 94901

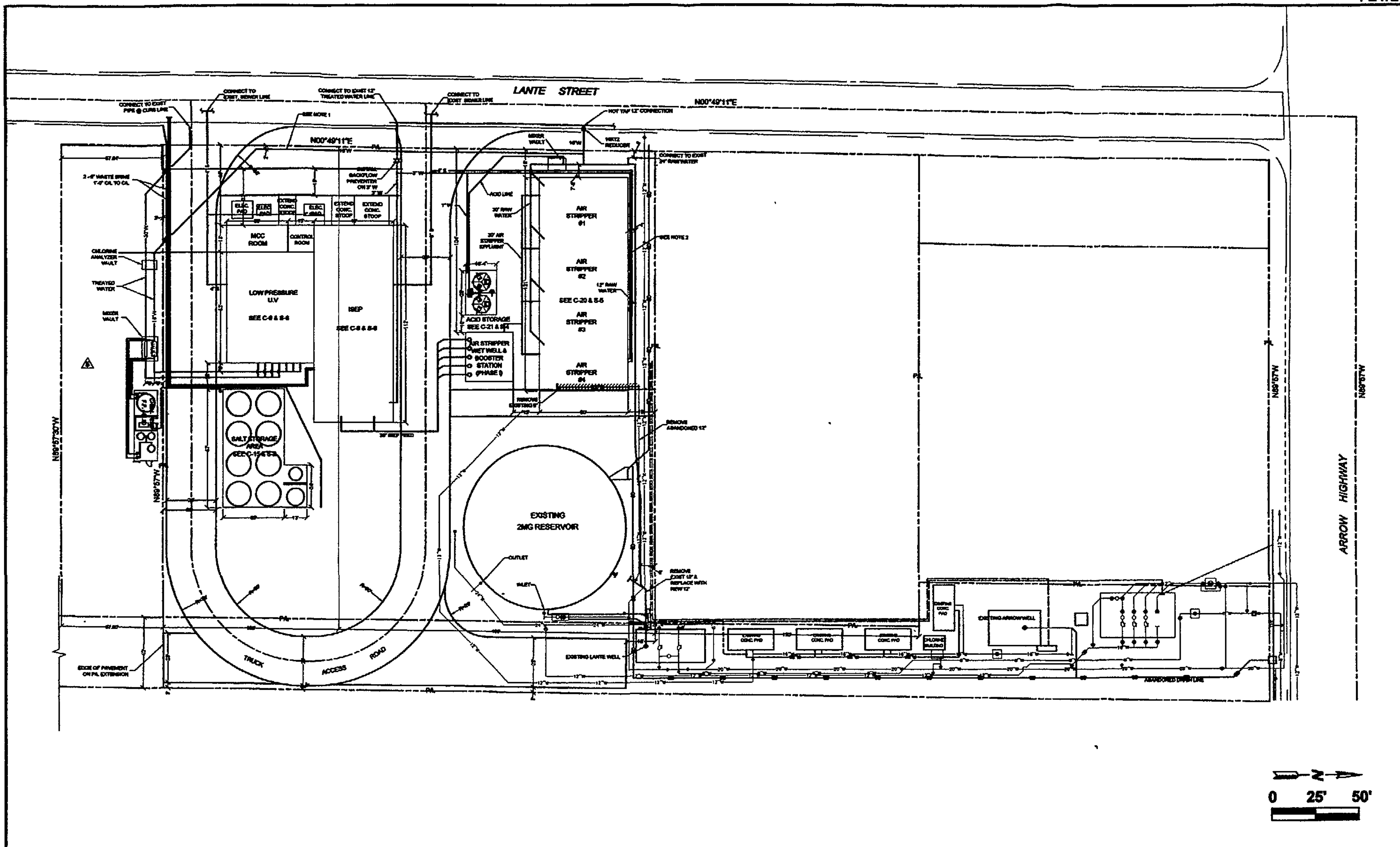
2851 W Guadalupe Rd., Suite A209
Mesa Arizona 85202

VALLEY COUNTY WATER DISTRICT

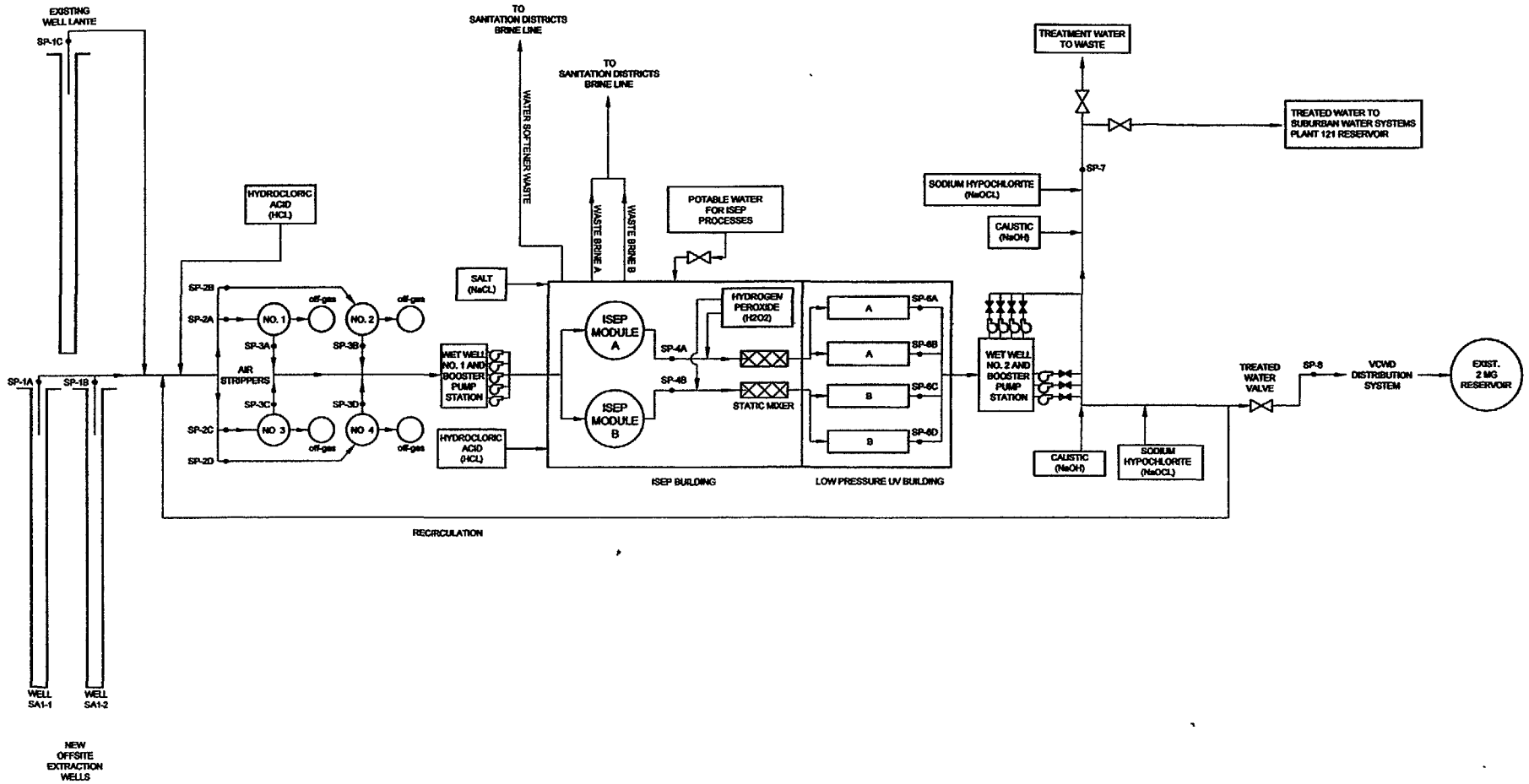
BALDWIN PARK OPERABLE UNIT
EXTRACTION PLAN
LOCATION AND PUMPING RATES

E:\JOBS\1962\01\Remedial Action Report\PLATE 1.DWG
E:\JOBS\1962-01(RAR).CTB

PLATE 2



APPROVED:	REV.	DATE	BY	LIST OF REVISIONS	DESIGNED:	STETSON ENGINEERS INC.	SUBMITTED:	VALLEY COUNTY WATER DISTRICT	SCALE	SHEET
DATE					DRAWN:		JAMES T. GARDNER	ARROW LANTE TREATMENT FACILITY PROJECT	AS NOTED	C-1
APPROVED: DATE					CHECKED:		R.E. No. DATE	SITE PLAN		OF SHEETS



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Mesa Arizona 85202

VALLEY COUNTY WATER DISTRICT

ARROW/ LANTE TREATMENT FACILITY

PROCESS DIAGRAM

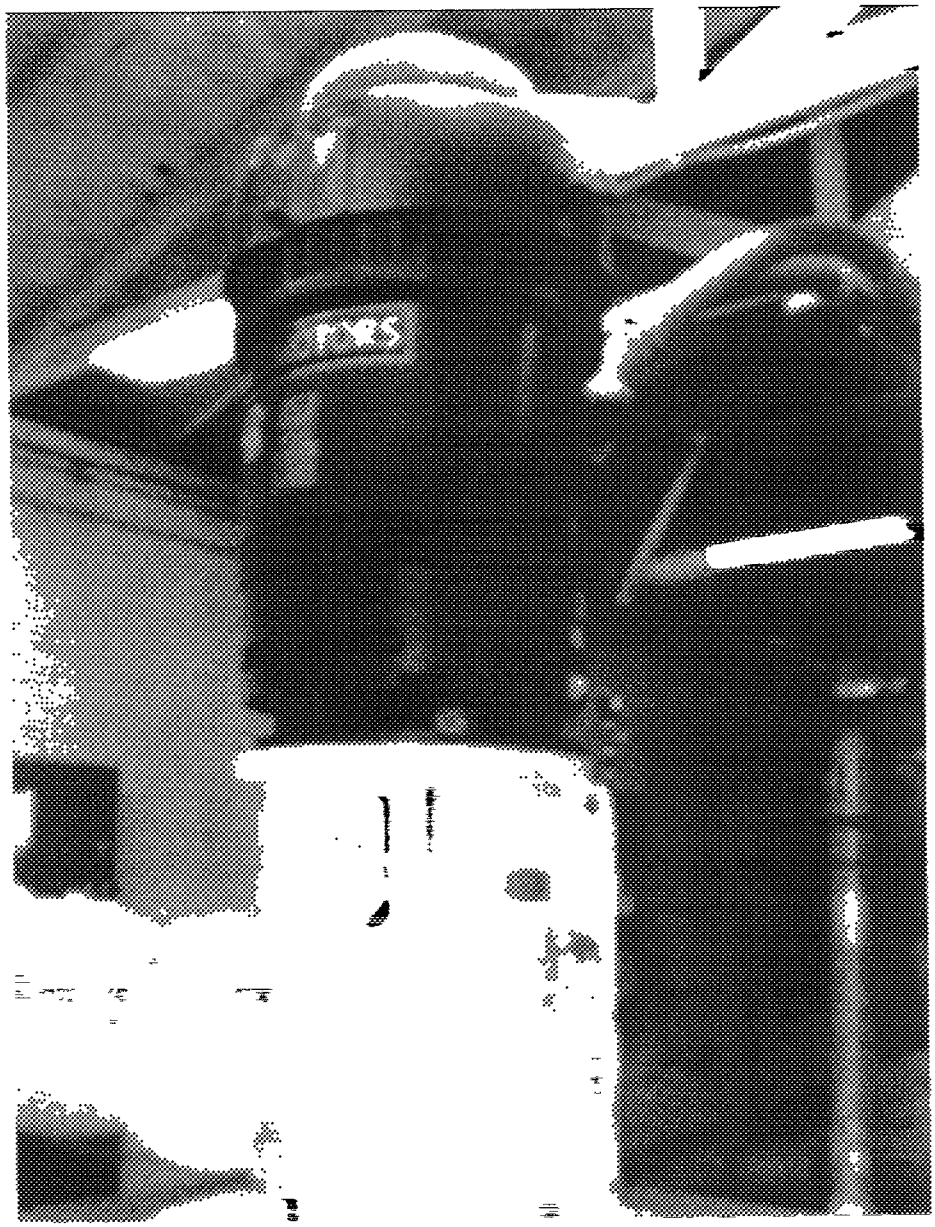

Photo 1. VCWD Lante Well at Arrow Lante Wellsite

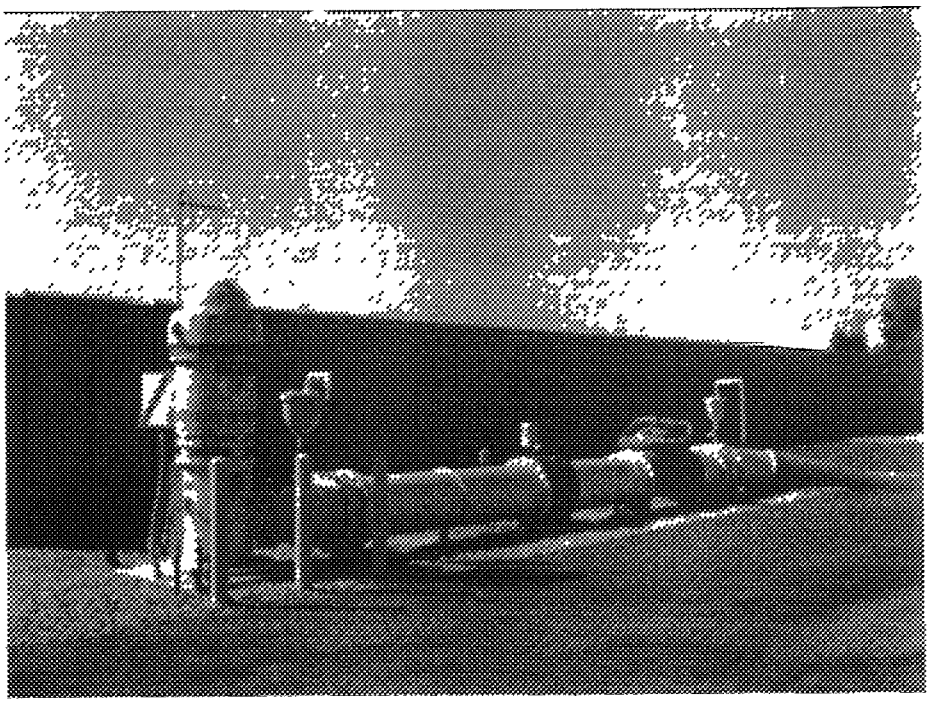

Photo 2. VCWD SA1-1 Well

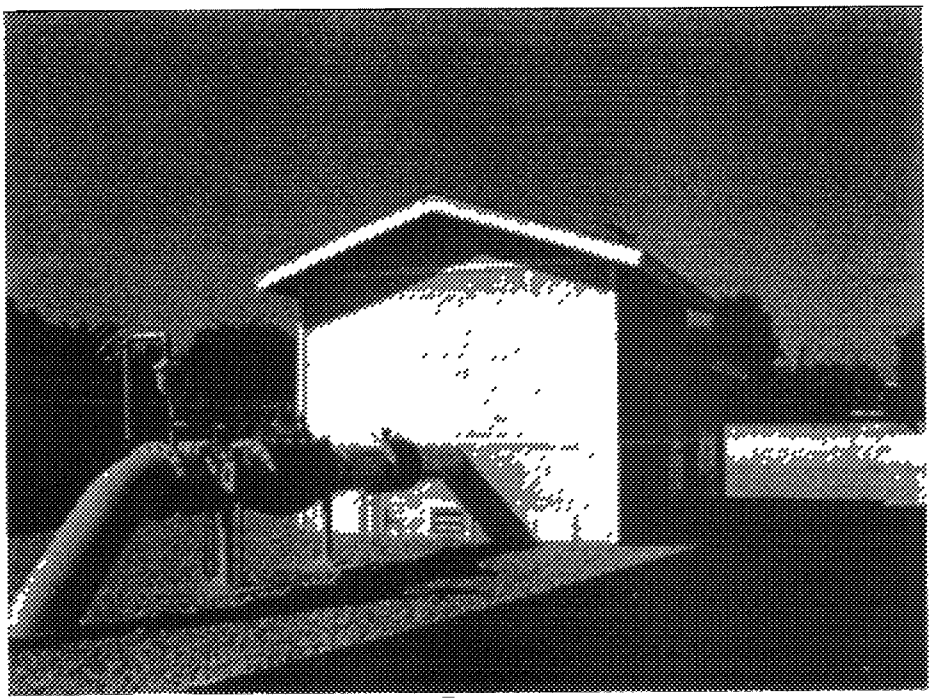

Photo 3. VCWD SA1-2 Well

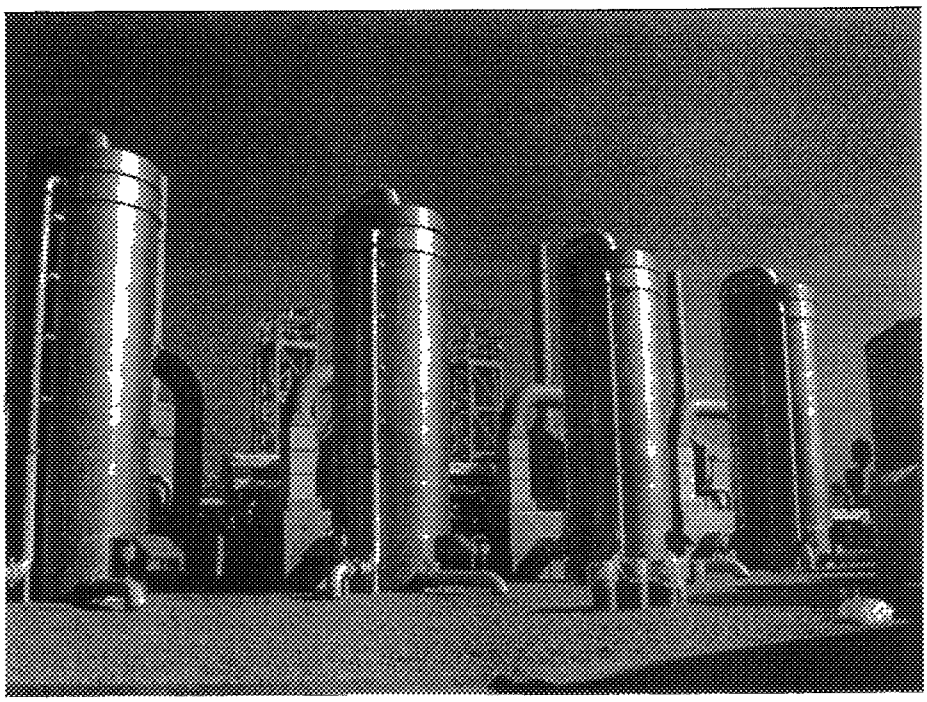

Photo 4. Air Stripping Towers and Off-Gas Units

Photo 5. ISEP Unit

Photo 6. UVTerra Unit

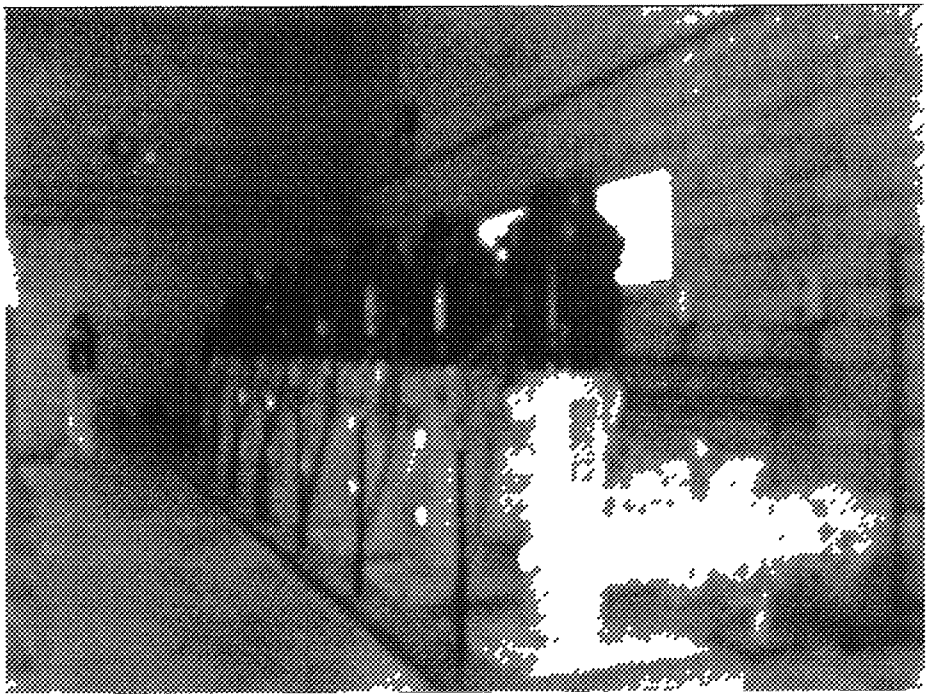

Photo 7. Treated Water Booster Pumps

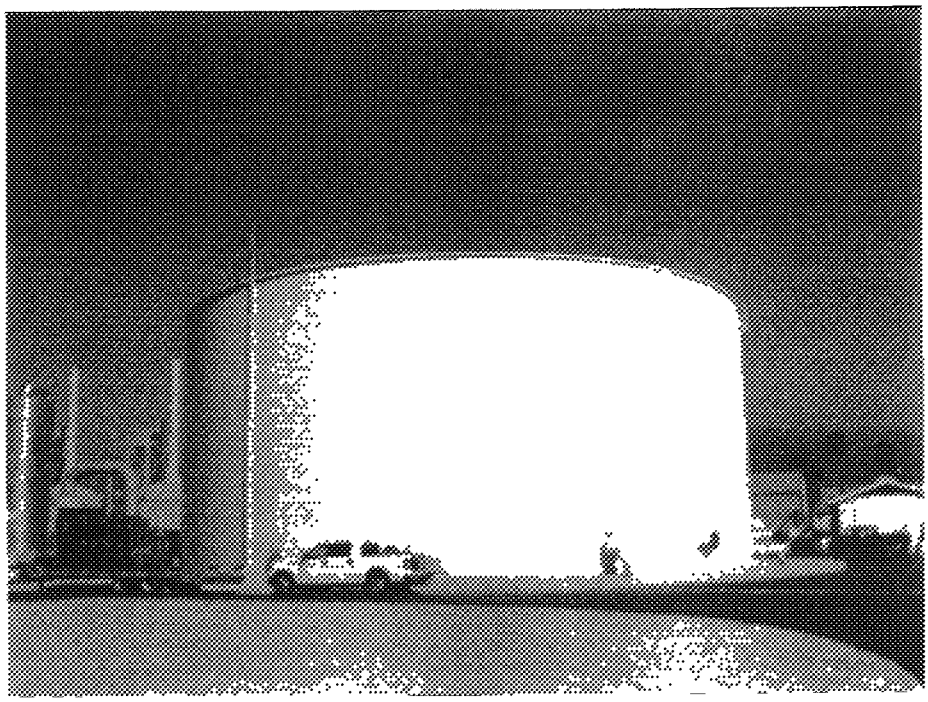

Photo 8. Treated Water Reservoir at Arrow Lante Wellsite

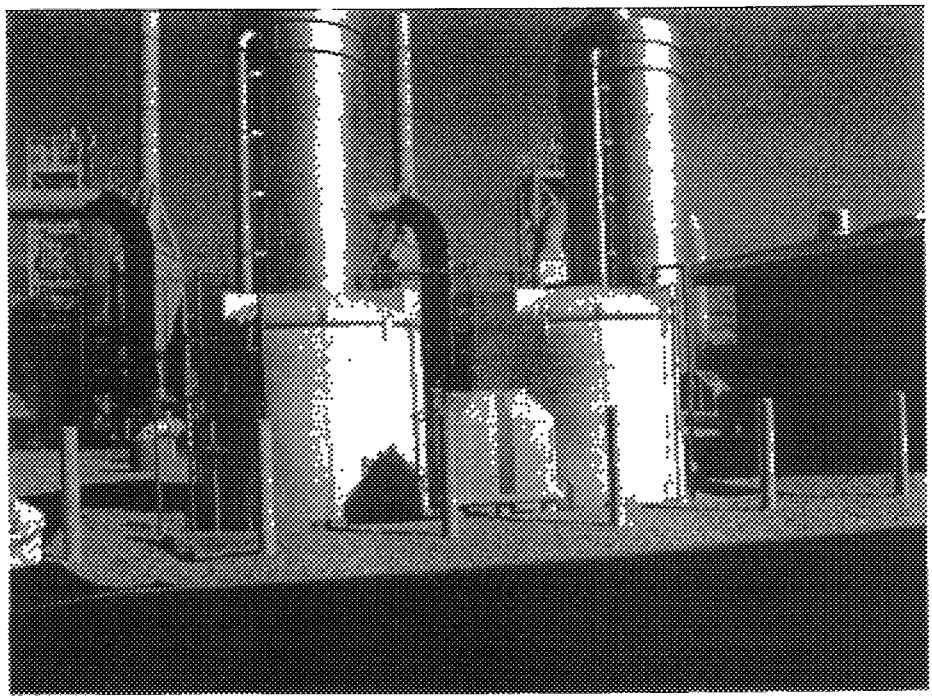

Photo 9. Acid Storage Tanks for the Air Strippers

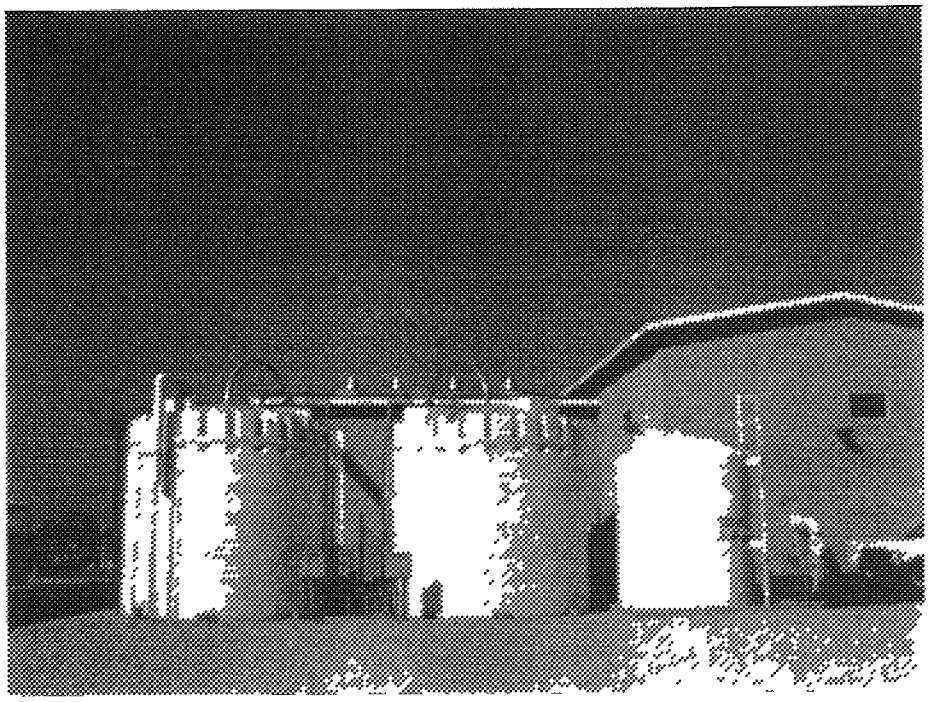

Photo 10. 26 % Brine Storage Tanks (left two) and
Hydrogen Peroxide Storage Tank (on the right)

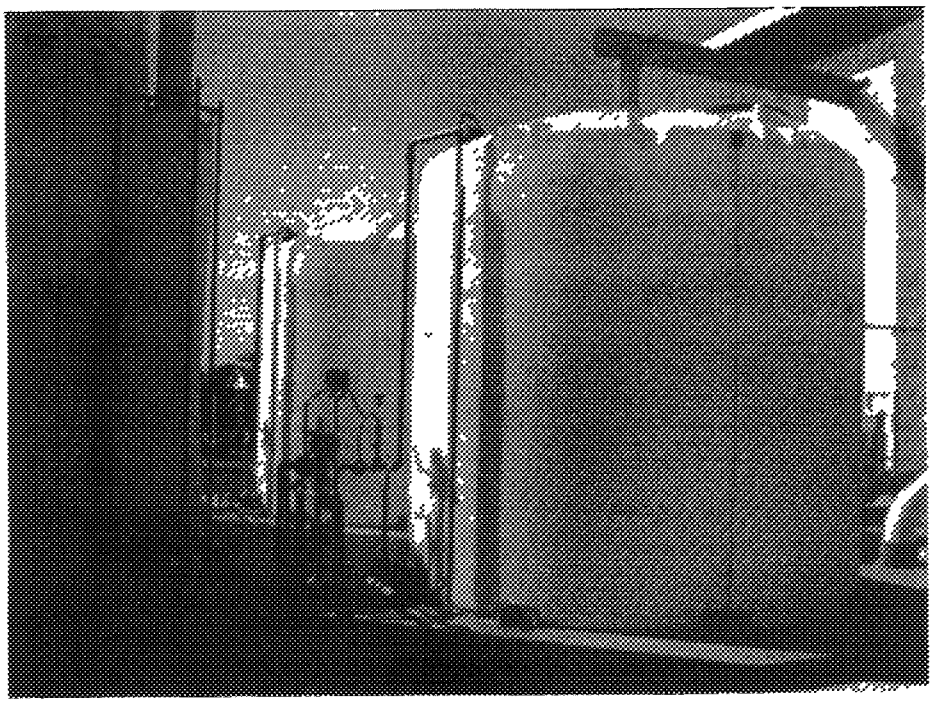

Photo 11. 7 % Brine Storage Tanks

APPENDIX A

VCWD LANTE TREATMENT FACILITY

CAPITAL COST ANALYSIS

PREPARED November 10, 2004

	BPOU WBS Codes		BPOU Project Agreement Cost Estimate (3/27/02) [1]	Actual Costs thru Oct-04 [2]	Revised Cost Estimate (Prepared 11/10/04) [3]
		Subarea 1 (7,800 gpm)			
		VCWD			
		Arrow/Lante Project (7,800 gpm Treatment, 2,000 gpm Production)			
1	1.3.01	Wells and Sitework - At Plant Site	$ 1,974,000	$ 6,458,015	$ 5,573,452
2	1.3.02 & 1.3.03	VOC Treatment (Air Strippers)	$ 1,970,000	$ 4,658,579	$ 4,929,245
3	1.3.04 & 1.3.05	ISEP Systems	$ 5,310,000	$ 6,159,180	$ 6,564,089
4	1.3.06 & 1.3.07	UV Systems (LPUV)	$ 2,680,000	$ 2,732,857	$ 3,587,458
5	1.3.06	Peroxide System	$ 170,000	$ -	$ -
6	1.3.08	Brine Destruction System	$ -	$ 5,612	$ -
7a		Brine Destruction (7,800 gpm/H2SO4)	$ -	$ -	$ -
7b		Treatment Train Independent Operations	$ 620,000	$ -	$ -
8	1.3.09	Brine Disposal Pipeline	$ 1,180,000	$ -	$ -
9	1.3.10	GAC Polish Treatment	$ 2,420,000	$ -	$ -
10	1.4.02	Treated Water Pipeline (to SWS Plant 121)	$ 4,950,000	$ 8,920,530	$ 8,820,611
11	1.3.11	EPA Required Monitoring Wells & Piezometers	$ 400,000	$ -	$ 713,134
12		**Construction Total**	**$ 21,674,000**	**$ 28,934,773**	**$ 30,187,989**
13	1.3.21 & 1.4.21	Engineering & Proj Coord (7.5%)	$ 1,630,000	$ 2,607,800	$ 2,691,000
14	1.3.22 & 1.4.22	Program Administration (LS)	$ 150,000	$ 348,104	$ 348,104
15	1.3.15 & 1.4.23	Permits (LS)	$ 75,000	$ 314,303	$ 314,303
16	1.3.16	Brine Line Connection Fee	$ 9,750	$ 21,806	$ 21,806
17	1.3.17 & 1.4.24	Environmental Documents (LS)	$ 25,000	$ 28,844	$ 28,844
18	1.3.90 & 1.4.90	Contingency (5%)	$ 3,250,000	$ -	$ 1,509,000
19	1.3.19 & 1.3.80	Other Capital Costs	$ -	$ 34,029	$ 34,029
20	1.3.18 & 1.4.25	Land Aquisition (LS)	$ 200,000	$ 616,851	$ 616,851
21		**Project Subtotal**	**$ 27,013,750**	**$ 32,906,511**	**$ 35,751,927**
22		Watermaster & WQA Labor Costs	$ -	$ 3,748	$ 3,748
23	1.5.01	Performance Fee (payment to water agency in accordance with Section 4.5.6 in the BPOU project agreement)	$ 186,000	$ -	$ 200,000
24		**Project Total**	**$ 27,199,750**	**$ 32,910,259**	**$ 35,955,675**
		SA1-2 and SA1-1 (2,300 & 3,500 gpm)			
1	1.1.01 & 1.2.01	Wells and Sitework - At Well Sites	$ 1,400,000	$ 2,963,754	$ 2,616,219
2	1.1.02 & 1.2.02	Raw Water Pipeline to Arrow/Lante Plant	$ 960,000	$ 555,615	$ 555,615
3	1.1.03 & 1.2.03	EPA Required Monitoring Wells & Piezometers	$ 500,000	$ 718,740	$ 659,562
4		**Construction Total**	**$ 2,860,000**	**$ 4,238,109**	**$ 3,831,396**
5	1.1.21 & 1.2.21	Engineering & Proj Coord (7.5%)	$ 214,500	$ 647,534	$ 647,534
6	1.1.22 & 1.2.22	Program Administration (LS)	$ 150,000	$ 115,045	$ 115,045
7	1.1.23 & 1.2.23	Permits (LS)	$ 75,000	$ 50,069	$ 50,069
8	1.1.24 & 1.2.24	Environmental Documents (LS)	$ 25,000	$ 7,658	$ 7,658
9	1.1.90 & 1.2.90	Contingency (10%)	$ 429,000	$ 99	$ 383,140
10	1.1.25 & 1.2.25	Land Aquisition (LS)	$ 400,000	$ 251,560	$ 251,560
11		**Project Total**	**$ 4,153,500**	**$ 5,310,074**	**$ 5,286,402**
		Construction Total - VCWD (SA-1)	**$ 24,534,000**	**$ 33,172,881**	**$ 34,019,385**
		Project Total - VCWD (SA-1)	**$ 31,353,250**	**$ 38,220,332.73**	**$ 41,242,078**

VCWD LANTE TREATMENT FACILITY
OPERATION AND MAINTENANCE COST ESTIMATE

	O & M ITEMS	BPOU Project Agreement Cost Estimate (3/29/02)	Revised O&M Cost Estimate (October 2004)
1.	Power	$189,000	$750,000
2.	Labor (w/fringe)	$200,000	$275,000
3.	Carbon Purchase	$60,000	$0
4.	Carbon Disposal	$0	$0
5.	Transportation	$24,000	$11,000
6.	Disinfection	$5,000	$3,008
7.	Water Testing	$113,000	$100,000
8.	Reports/Compliance	$15,000	$9,023
9.	Permits/Renewals	$10,000	$25,000
10.	Operations Monitoring	$13,000	$7,820
11.	Brine Disposal	$35,000	$21,053
12.	Matts/Supplies	$1,050,000	$631,599
13.	Off-site Pipe Maint.	$44,000	$26,467
14.	Repair/Replacement	$282,000	$169,630
15.	Contractor Labor	$60,000	$286,091
16.	Direct Eng./Legal	$39,000	$50,000
17.	Insurance	$48,000	$28,873
18.	Taxes	$0	$0
19.	MWD Purchase	$0	$300,000
	Subtotal	**$2,187,000**	**$2,694,564**
	Other Annual Costs		
a.	O & M Mgmt. Fee	$68,200	$68,200
b.	EPA Monitoring	$0	$0
c.	WM & Legal Admin.	$0	$0
d.	Cost Consultant	$0	$0
e.	Risk Manager	$0	$0
f.	Water Transfer Cost	–	$0
	Subtotal	**$68,200**	**$68,200**
	TOTAL	**$2,255,200**	**$2,762,764**

NOTES:

1. Power costs based on power rate of $0.07/kwh.
2. Assumes low-energy uv/ox.
3. Assumes direct brine discharge to LACSD.
4. Materials account for increased salt consumption.
5. O & M Management Fee prorated as follows:
   (BPOU Project: 22,000 gpm = 2,500 + 6,000 +6,500 + 7,000 to $250,000)
6. Does not include escrow/trust costs.
7. Does not include insurance costs.
8. MWD Purchase includes payment to water agency for alternative water supply in accordance with Section 2.1.3 of the BPOU project agreement.